

WHAT IS CLAIMED IS:

1. A jet-propulsion small watercraft, comprising:

a water jet pump that pressurizes and accelerates water taken in from outside and ejects the water from an outlet port provided behind the water jet pump to propel the watercraft as a reaction of the ejecting water;

a steering means configured to steer the watercraft by changing an ejection direction of the water ejected from the outlet port;

a throttle operation means configured to operate a throttle valve of an engine;

a steering throttle drive means configured to cause the throttle valve of the engine to open a predetermined angle under a predetermined condition, thereby maintaining a steering capability, in response to a closing operation of the throttle operation means;

an actuator configured to cause the throttle valve of the engine in a closed position to open a predetermined angle by the steering throttle drive means; and

a spring configured to return the throttle valve of the engine to the closed position, wherein

the actuator includes a motor configured to be energized at a predetermined current value by control of a control device, a reduction mechanism configured to reduce a speed of the motor, and an output shaft configured to be rotated at a reduced speed by the reduction mechanism, and

when energizing the actuator is stopped by the control of the control device, the actuator permits the throttle valve of the engine to return to the closed position by a spring force of the spring.

2. The small watercraft according to Claim 1, wherein the steering throttle drive means is a steering throttle arm attached on a throttle operation shaft of the engine, the steering throttle arm being configured to be rotatable integrally with the throttle operation shaft only in a direction to rotate for increasing an engine speed of the engine and not to be rotatable integrally with the throttle operation shaft in an opposite direction.
3. The small watercraft according to Claim 2, wherein the throttle operation shaft is provided with a propulsion throttle arm capable of operating the throttle valve by an operation of the throttle operation means.
4. The small watercraft according to Claim 3, wherein the propulsion throttle arm is attached on the throttle operation shaft to be rotatable integrally with the throttle operation shaft only in a direction to rotate for increasing the engine speed and not to be rotatable integrally with the throttle operation shaft in an opposite direction.
5. The small watercraft according to Claim 4, wherein the steering throttle arm and the propulsion throttle arm are configured to operate the throttle operation shaft and operate independently of each other so that an operation of one of the steering throttle arm and the propulsion throttle arm does not affect an operation of the other.
6. The small watercraft according to Claim 2, wherein a reel member is attached on the output shaft of the actuator to be rotatable integrally with the output shaft, an end of a wire is attached to the reel member, and an opposite end of the wire is attached to

the steering throttle arm.

7. The small watercraft according to Claim 1, wherein the motor is a servo motor, the small watercraft further comprising:

a stopper configured to stop the steering throttle drive means at a position where the throttle valve of the engine is opened the predetermined angle to inhibit further operation from the position, and

the control device is configured to control a value of a power of the servo motor to reduce an output value of the servo motor, upon detecting variation in current being supplied to the servo motor when the steering throttle drive means makes contact with the stopper.

8. The small watercraft according to Claim 7, wherein when the steering throttle drive means makes contact with the stopper, the control device is configured to execute control to cause the value of the power of the servo motor to be reduced to substantially 30% of the value of the power of the servo motor in a state in which the steering throttle drive means is not in contact with the stopper.

9. The small watercraft according to Claim 1, wherein the reduction mechanism comprises a gear train comprised of pinion and large gears having different numbers of teeth, and the actuator is covered by a water-proof cover, wherein a shaft on which at least one of the gears is attached is supported by a bearing attached to the water-proof cover.

10. The small watercraft according to Claim 1, wherein the spring is a helical torsion spring provided on a throttle operation shaft.

11. An actuator for use as a drive source of a movable portion of the small watercraft, comprising:

a motor for driving an output shaft of the actuator;  
a reduction mechanism configured to reduce a speed from the motor and transmit the reduced speed toward the output shaft;  
a control means configured to control a value of a power of the motor; and  
a water-proof cover configured to expose an output portion of the output shaft and cover at least the motor, the reduction mechanism, and part of the output shaft.

12. The actuator according to Claim 11, wherein the motor is a servo motor, the actuator further comprising:

a stopper configured to stop the output shaft at a position where the output shaft rotates a predetermined angle so as to inhibit further rotation from the position, and

the control device is configured to control a value of a power of the servo motor to reduce an output value of the servo motor, upon detecting variation in current being supplied to the servo motor when the output shaft makes contact with the stopper.

13. The actuator according to Claim 11, wherein when the output shaft makes contact with the stopper, the control device is configured to execute control to cause the value of the power of the servo motor to be reduced to substantially 30% of the value of the power of the servo motor in a state in which the output shaft is not in contact with the stopper.

14. The actuator according to Claim 11, wherein the reduction mechanism comprises a gear train comprised of pinion and large gears having different numbers of teeth, and a shaft on which at least one of the gears is attached is supported by a bearing attached to the water-proof cover.